

1
2 I claim:

3
4 1) A process and system for improving watermark detection by compensating for
5 artifacts introduced by the printer and/or scanner through which the image has passed
6 prior to detecting a watermark in said image.

7
8 2) A process or system for improving watermark detection by applying different
9 compensation to an image in the "x" and "y" (that is, the vertical and horizontal)
10 directions to eliminate anomalies introduced by a printer or scanner which differ in the "x"
11 and "y" directions.

12
13 3) In a system that includes a scanner that includes a down loadable tone map, a
14 scanner driver that includes a calibrated tone map for the scanner and user controls
15 which control modification of said calibrated tone map to generate a user adjusted tone
16 map, said scanner generating an image which has been modified by said user controlled
17 tone map,
18 the improvement comprising a program to reverse the action on said image of the user
19 modifications to said calibrated tone map.

20
21 4) A method of reading a watermark or pattern from a digital image generated by a
22 scanner from a hard-copy image, said digital image most nearly matching said hard-
23 copy image when the image generated by said scanner is modified in accordance with a
24 calibrated tone map, said method comprising,
25 down-loading into said scanner a user modified tone map,
26 modifying said image in said scanner with said user modified tone map,
27 transferring said scanner modified image to a computer attached to said scanner,
28 modifying said modified image with a tone map that reverses any differences between
29 said calibrated tone map and said user modified tone map to generate a reverse
30 modified tone map, and
31 reading said watermark or detecting said pattern in said image.

1 5) A method of controlling operations with data carried in a physical image comprising
2 the steps of:
3 scanning said physical image with a scanner which has an associated calibrated tone
4 map which will compensate for differences between the image generated by said
5 scanner and the characteristics of said physical image,
6 adjusting said calibrated tone map in accordance with user supplied parameters to
7 produce a user adjusted tone map,
8 applying said user adjusted tone map to said image to produce a user desired image,
9 applying a tone map to said user desired image which is the inverse of the changes
10 made to said calibrated tone map to generate said user desired tone map, to generate
11 an image that corresponds to the image generated by said scanner compensated by
12 said calibrated tone map,
13 reading a characteristics of said image,
14 controlling said operations with the result of said reading step.

15
16 6) The method recited in claim 5 wherein said reading step reads a digital watermark
17 from said image.

18
19 7) The method recited in claim 5 wherein said reading step detects a shape in said
20 image.

21
22 8) The method recited in claim 5 wherein said reading step reads attempts to both read
23 a digital watermark from said image and to and detects a shape in said object.

24
25 9) A method of operating on an image comprising the steps of
26 generating a first digital image from a physical document,
27 applying a first tone map to said image to generate an adjusted digital image,
28 applying an second tone map to said adjusted digital image to generated a corrected
29 digital image, said second tone map adapted to reverse an changes made to said first
30 digital image that differ from changes specified by a calibrated tone map,
31 operating upon said corrected digital image to determine characteristics of said
32 corrected digital image.

1 10) The method recited in claim 9 wherein said corrected digital image is operated upon
2 to read a digital watermark from said corrected digital image.

3
4 11) The method recited in claim 9 wherein said corrected digital image is operated upon
5 to detect a pattern in from said corrected digital image.

6
7 12) A system which includes a scanner which has the ability to apply a tone map to a
8 scanned image, and a data source which calculates a user adjusted tone map by
9 applying to a calibrated tone map user established parameters, said data source having
10 the ability to down load said user adjusted tone map to said scanner, said scanner
11 adapted to applying said user adjusted tone map to said scanned image to generate an
12 adjusted image,
13 an inverse user adjustment program that generates a corrected image by applying to
14 said adjusted image a tone map that reverses changes made to said calibrated tone
15 map to generate said user adjusted tone map,
16 program for detecting characteristics of data in said image.

17
18 13) The system recited in claim 12 wherein said program for detecting characteristics of
19 data in said image comprises a watermark reading program.

20
21 14) The system recited in claim 12 wherein said program for detecting characteristics of
22 data in said image comprises a program for detecting shapes in said image.

23
24 15) A system for operating on an image comprising
25 an image acquisition device for generating a first digital image from a physical
26 document, said image acquisition device applying a first tone map to said image to
27 generate an adjusted digital image,
28 an inverse user adjustment program for applying a second tone map to said adjusted
29 digital image to generated a corrected digital image, said second tone map adapted to
30 reverse an changes made to said first digital image that differ from changes specified by
31 a calibrated tone map,
32 a program which operates upon said corrected digital image to determine characteristics
33 of said corrected digital image.

1 24) A method of creating a digital image that corresponds to an image on a physical
2 document,
3 scanning said physical document with a scanner to produce a first digital image, the
4 frequency response of said scanner decreasing at higher frequency values,
5 filtering said first digital image with a filter which compensates for the frequency
6 response of said scanner.

7

8

9 25) A system which includes a TWAIN compliant scanner which has the ability to apply
10 a tone map to a scanned image, and a TWAIN data source which calculates a user
11 adjusted tone map by applying to a calibrated tone map user established parameters,
12 said TWAIN data source having the ability to down load to said scanner said user
13 adjusted tone map, said scanner adapted to applying said user adjusted tone map to
14 said scanned image to generate an adjusted image,
15 an inverse user adjustment program that generates a corrected image by applying to
16 said adjusted image a tone map that reverses changes made to said calibrated tone
17 map to generate said user adjusted tone map,
18 a computer program for which examines characteristics of said corrected image.

19

20 26) The system recited in claim 25 wherein said program is adapted to read a digital
21 watermark in said image.

22